

**Report on Implementation of Wireless E911 Phase II**  
**Automatic Location Identification, CC Docket No. 94-102**

Public Service Cellular, Inc. pursuant to requirements set forth in CC Docket 94-102,<sup>1</sup> hereby files this report on implementation of wireless E911 Phase II Automatic Location Identification.

**I. Background/Contact Information**

Carrier Identifying Information:

Carrier's Name: Public Service Cellular, Inc.  
Carrier's TRS Number: 808332

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**II. E911 Phase II Location Technology Information for Public Service Cellular, Inc.'s Cellular Network**

Type of Technology:

Public Service Cellular, Inc. plans to deploy Phase II location handset-only technologies across its service territory. After evaluating alternative solutions, Public Service Cellular, Inc. favors this solution as it requires fewer infrastructure modifications, thereby minimizing testing for

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<sup>1</sup>See Revision of the Commission's Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems, CC Docket No. 94-102, *Report and Order and Further Notice of Proposed Rulemaking*, 11 FCC Rcd 18676 (1996); *Third Report and Order*, FCC 99-245, rel. Oct. 6, 1999; *Fourth Memorandum Opinion and Report*, FCC 00326, rel. Sept. 8, 2000; and "Wireless Telecommunications Bureau Provides Guidance on Carrier Reports on Implementation of Wireless E911 Phase II Automatic Location Identification," *Public Notice*, DA 00-2099, rel. Sept. 14, 2000.

interoperability and conflicts between different location-based product suppliers as well as between location -based product and infrastructure product suppliers. Further, the handset approach minimizes deployment time of infrastructure equipment needed to support enhanced 911 wireless services. It is important to note, however, that only ALI-capable handsets can be located with Phase II accuracy, requiring deployment of ALI-capable handsets. Most products provide location of legacy handsets to varying levels of accuracy below the phase II requirements. Because, handset-based E911 solutions require line of sight to GPS satellites, if testing indicates that handset solution alone will not meet the phase II accuracy requirements, Public Service Cellular, Inc. may opt to utilize ground-based transmitters, such as in the network assisted system. Further, if it becomes apparent that the handset-only solution is not technically or financially feasible, or if handset availability is such that the Commission mandated percentage requirements cannot be met, Public Service Cellular, Inc. may be forced to implement either a network-based or other hybrid solution instead.

Public Service Cellular, Inc. has observed through it's consultants that the current state of the technology required for Phase II deployment is not yet fully ready and that development will progress significantly over the next 6 to 12 months. Further, Public Service Cellular, Inc. believes that none of the vendors we are aware of appears to be ready to promise delivery to smaller carriers with a feasible, compliant solution by First Quarter 2001, because the vendors are likely to concentrate on the largest carriers first. Public Service Cellular, Inc. does however expect vendors to address the needs of smaller carriers at some point.

The problems associated with Phase II deployment continue to be a concern for Public Service Cellular, Inc. Network based solutions which employ triangulation or similar techniques will not currently meet the accuracy requirements in rural areas. Handset based solutions may meet the necessary requirements for accuracy, however availability is still a problem.

**Testing and Verification: *Provide a complete description of the testing method used, or to be used, to determine the accuracy of the ALI solution(s) selected, and a description of the results of tests already conducted.***

Public Service Cellular, Inc. will use empirical testing of ALI equipment of systems in operation. Public Service Cellular, Inc. will take an accuracy measurement at each point of a sample set of randomly selected locations representing 911 call locations. Tests will then be performed at each of these sample locations to determine the distance between the actual location and the location reported by the ALI system. Public Service Cellular, Inc. presently envisions that random selection of sample locations will occur as follows: Public Service Cellular, Inc. will use one of the random number generator algorithms found on computers applied to scientific/engineering problems to generate a number of locations from random latitude-longitude pairs. The latitude and longitude numbers generated should at first be uniformly distributed inside

a coordinate rectangle containing the operating area, and points out of the operating area itself subsequently dropped. If it is later found that a point is inaccessible, replace it by no more than three meters beyond the nearest point on the boundary with an accessible area. If the point is inside a building, the floor of the building may be selected when the test crew arrives. Initially, no weighting factors will be used for the likelihood that a 911 call will be made from a particular site. However, as more data is gathered, Public Service Cellular, Inc may incorporate weighting factors into its methodology. Public Service Cellular, Inc agrees to utilize the conventions indicted in OET Bulletin No. 71 to ensure reliability and comparability of data. (See OET Bulletin No. 71 at 7-8.)

**Implementation Details and Schedule:** *Provide a complete description of the carrier's strategy and schedule for the installation of the hardware and software needed to implement its chosen technology (handset-based, network-based or hybrid systems). For example, indicate whether both hardware and software changes will be necessary and fully describe the precise nature of the changes. In addition, please provide the roll-out schedule for the installation of the ALI technology(ies).*

Public Service Cellular, Inc is currently working with both infrastructure and handset vendors to determine the availability of products as well as interoperability between products from different vendors to meet the Commission's timeline for a handset-based solution. Before deploying a solution, Public Service Cellular, Inc will conduct interoperability tests for each solution to ensure reliability and quality of service. The interoperability tests are expected to last six months. After verification of the solution, Public Service Cellular, Inc expects the general time frame from PSAP request to initial deployment to be six months. Presently, the lack of availability of ALI-compliant handsets has made software delivery dates from Public Service Cellular, Inc's network provider, unavailable. Public Service Cellular, Inc's network utilizes Lucent Technologies, Inc. equipment. Lucent's Account Executive for Public Service Cellular, Inc. has indicated that Lucent currently has no date available for the requisite hardware/software to implement handset-based E911. Public Service Cellular, Inc. has no control over the manufacturer's ability to set or meet such dates. Further, Public Service Cellular, Inc. may be required to modify its E911 proposal or request a waiver or extension of its current deadlines if its manufacturer is unable to timely supply these key components.

**PSAP Interface:** *Provide a description of hardware and software changes necessary to transmit Phase II data to PSAPs and the carrier's strategy and schedule for the installation and/or modification of such hardware or software changes.*

In addition to supporting the interface between Mobile Positioning Center and the Emergency Service Messages Entity, the Public Service Answering Points will be required to obtain mapping software and software to extrapolate the latitude and longitude coordinates.

Existing Handsets: ***Provide a description of the carrier's strategy and schedule for the upgrade and/or replacement of existing customer handsets, if hand-set based solution is desired.***

Public Service Cellular, Inc. is developing a multi-phase strategy for hand-set deployment. This process will begin with using sales professionals to make consumers aware that ALI-compliant handsets are available and the benefit of owning such a handset. Added to this will be marketing with safety slogans to encourage the use of ALI-compliant handsets. Next inventory quantities will be adjusted to Phase out non-compliant phones. In addition, handset price adjustments may have to be introduced to make ALI-compliant units more attractive to consumers.

Existing customers who have not upgraded to ALI-complaint handsets will be targeted and encouraged through bill inserts and other ads to upgrade. Some pricing incentives may be required to encourage the movement. The final step would involve identifying the reaming non-compliant handsets in the network and contacting each customer to explain the necessity of upgrading. Further incentives may be required to migrate the remaining consumers to complaint handsets.

Public Service Cellular, Inc. will put forth it's best efforts to meet the FCC's timetable for implementation. This process will start during the first quarter of 2001 and will continue until complete. This timeline is subject to availability of ALI-compliant handsets in sufficient quantity and selection.

Location of Non-Compatible Handsets: ***Provide a description of the best efforts that carriers employing a handset-based or hybrid system will take to accommodate handsets that are incompatible with the carrier's ALI system, e.g., handsets that do not have ALI capability, or handsets that are ALI-capable, but are not compatible with the carrier's particular handset-based or hybrid system.***

Public Service Cellular, Inc. is currently working with infrastructure vendors to optimize location identification of non-compatible handsets, such as roamers. Public Service Cellular, Inc. will continue to evaluate new technologies to improve the accuracy for non-compatible handsets and roamers. However, at present, Public Service Cellular Inc.'s decision to implement handset-based E911 will preclude its ability to provide E911 Phase II-compliant infrastructure to non-ALI handsets and will continue to offer Phase I-compliant service to these units where available.

Other Information: *Please provide any other information, including a description and history of any Phase II requests received from PSAPs, that will assist the Commission and affected parties in monitoring and coordinating the deployment of E911 Phase II in accordance with the timetables set forth in the Commission's rules.*

No requests or inquiries regarding E911 Phase II have been received to date.

### **III. E911 Phase II Location Technology Information for Unconstructed Broadband Personal Communications Services Network**

In addition to its cellular holdings, Public Service Cellular, Inc. holds licenses for Broadband Personal Communications Service stations KNLG210 (Anderson BTA), KNLH422 (Anniston BTA), and KNLH421 (Columbus BTA). We have not yet determined the technology that will be used in the build-out of our licensed PCS system, including whether we will use a network based or handset based solution to comply with the E911 ALI Phase II requirement. Once such a determination is made, we will file a supplemental report which will indicate the type of technology, as well as the equipment vendor, timetable for deployment, and program to ensure a successful implementation. Such report will be filed within 30 days of our implementation decision, in accordance with Rule Section 20.18(i). Testing to verify the Phase II capability will be conducted in accordance with the Empirical Testing Method per OET Bulletin No. 71 and the equipment manufacturer's requirements.

Public Service Cellular, Inc. is a rural telephone company serving rural Georgia, and will be providing PCS service primarily to rural or non urbanized communities. Because of the higher per pop cost of a rural build-out, and reduced expectation of revenues (due to lower population density), we must be careful in choosing the technology and signaling format that we will use. We have been monitoring the progress of various Phase II E911 technologies under development, and have obtained, through our consultants, basic information concerning network-based vendors such as Allen Telecom/Grayson Wireless Division, Cell-Loc, Inc./Times Three, Inc., True-Position, Inc., U.S. Wireless Corp., and XYPOINT Corporation; handset-based vendors such as SnapTrack, Inc. and others such as Motorola, Inc., Nokia and Ericsson. We are also aware of a hybrid approach under development by Focusystems, Inc. Based on this information, we have come to the following preliminary conclusions:

1. All of the above products are still under development, and we expect that all will progress significantly over the next 6 to 12 months. We believe that none of these vendors appears to be ready to promise delivery to smaller carriers or a finished product by October 1, 2001, because the vendors are likely to concentrate on the largest carriers. However, we expect that this situation will change substantially

by the time we are ready to deploy Phase II technology, and we therefore believe that progress made in rolling out Phase II capabilities in urban areas will allow us to more rapidly deploy a proven technology in our less populated service area.

2. If we were implementing Phase II today, we would be concerned about the high cost of a network solution, as well as the problems associated with the use of triangulation and similar techniques in a rural setting, where towers are widely spaced and may be separated by uneven terrain. We would likewise be concerned with the sparsity of pricing and delivery information for handset ALI technology, and the fact that GPS solutions are generally limited by the ability of the handset to have a clear line of sight to the GPS satellite (which may limit the effectiveness of E911 calls made from indoors, heavily forested areas, etc.) Again, we are aware that the manufacturers are addressing all of these issues, and expect that they will be largely resolved by the time we deploy our system and receive a PSAP request for Phase II capability.

In order to ensure that we timely achieve compliance with the Commission's E911 requirements, once we have chosen our overall PCS technology, we will promptly evaluate the status, pricing and availability of all Phase II technologies at that time, and evaluate their effectiveness and feasibility based on the signaling format we have chosen. If we affiliate with other carriers based on our choice of format, the Phase II solution chosen by the affiliated carriers will be factored into our evaluation. We will also consult with industry sources, especially other rural telephone companies engaging in the provision of PCS, to determine which solution works best for rural areas. We will then decide on a vendor and proceed to implement the chosen solution in accordance with the Commission's Rules. It is contemplated that we will use customer mailings, bill inserts, store promotions and similar efforts to make our customers and potential customers aware of the availability and benefits of Phase II capability. Depending on the timing of our activation and related PSAP requests, our system may be Phase II compliant from the initiation of service, in which case it is expected that virtually all customers placed on the system will be Phase II compliant.

Because we have not implemented service, we have not received any PSAP Phase I or Phase II requests, with respect to our PCS systems, to date.

**IV. Conclusion**

This report does not constitute a final or irrevocable commitment to the ALI technology that Public Service Cellular, Inc. will employ. Public Service Cellular, Inc. may make good faith changes in its implementation plans after its initial report is filed, including changes in ALI technologies. Any changes will be filed within thirty (30) days of adoption of any such change.

Respectfully submitted,

Public Service Cellular, Inc.

By: /s/ E. Kelly Bond  
E. Kelly Bond, Vice President